1. Study Section 8.4.

2. Do Exercise 8.5.
   These are all one-step proofs!

3. Prove (8.23b), Split off term.

4. Extra credit. Not required.
   The proof of (8.23a) Split off term uses the fact that

   $$0 \le i < n+1 \;\equiv\; 0 \le i < n \lor i = n$$

   under the assumption that n: $\mathbb{N}$, that is, $0 \le n$. Give a detailed proof of this fact by filling in the steps of the formal proof below from the hints.

   $0 \le i < n+1$
   $=$ ⟨Remove the conjunctive abbreviation⟩

   $=$ $\langle i < n+1 \;\equiv\; i < n \lor i = n \rangle$

   $=$ ⟨(3.46) $\wedge$ distributes over $\vee$⟩

   $=$ ⟨(3.84a) Substitution⟩

   $=$ ⟨Assumption $0 \le n$⟩

   $=$ ⟨(3.39) Identity of $\wedge$⟩

   $=$ ⟨Reintroduce conjunctive abbreviation⟩
   $0 \le i < n \lor i = n$